

REMARKS

Claim 11 has been amended to eliminate certain originally claimed features of the base part and entrance lens part while incorporating the exit lens part feature from now canceled claim 12. Those portions canceled from claim 11 are now present in new dependent claim 20. Similar changes have been made with respect to claims 17 and 18; new dependent claim 21 recites the features taken out of claim 17. Claims 13, 15 and 16 have been amended properly to depend from amended claim 11.

The rejection of claims 11 to 13 and 16 to 18 under 35 USC 103 as unpatentable over Yoshimura et al. '031 in view of EP '460, if applied to claims 11, 13, 16, and 17, is respectfully traversed. The Examiner properly notes that the primary reference shows a lenticular lens sheet that does not have a tinted layer formed on at least a portion of the entrance lens part. The Examiner then cites EP '460 for such disclosure and asserts that it would have been obvious to a person of ordinary skill in the art to use the tinting arrangement of EP '460 in the Yoshimura et al. '031 configuration because, by doing so, one will form a device that will "exhibit fine contrast in the display." Applicants

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respectfully submit that the references do not properly teach or suggest the invention as claimed for the following reasons.

The present invention as clearly called for in claims 11 and 17 is directed to a lenticular lens sheet (or a rear projection screen containing same) that is a double-sided black stripes lenticular lens sheet including (1) an entrance lens part forming the entrance surface thereof and having an array of a plurality of convex lens elements capable of gathering light rays, (2) an exit lens part forming the exit surface thereof and having an array of a plurality of lens elements formed respectively in light-gathering regions in which light rays refracted by the convex lens elements of the entrance lens part gather, and (3) a light absorbing layer formed in light nongathering regions in the exit surface thereof in which light rays refracted by the convex lens elements of the entrance lens part do not gather. The entrance lens part of the double-sided black stripes lenticular lens sheet is provided with a tinted layer that covers at least a portion thereof near the entrance surface of the lenticular lens sheet. With such an arrangement, even in those instances where the incident angle of image light rays falling on the lenticular lens sheet is considerably large (such as the image light rays from an image

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source including three cathode ray tubes), it is possible effectively to suppress the generation of stray light rays in the lenticular lens sheet (a particular problem for double sided black stripes lenticular lens sheets) while enhancing contrast in images displayed on the lenticular lens sheet.

Applicants acknowledge that Yoshimura et al. '031 discloses general arrangements of a double-sided black stripes lenticular lens sheet. The patent, however, says nothing about tinting anywhere or any reason or need to do so. The device, as explained below, is regarded as complete. EP '460, in contrast, describes a single-sided lenticular lens sheet wherein a tinted layer is formed in a portion of the entrance lens part of the lenticular lens sheet. It is believed apparent from a review of the drawings depicting the EP '460 invention that the lenticular lens sheet is single sided; see, e.g., Figs. 1A, 1B, 3A, 11A, 11B, 11C, and 12.

Applicants respectfully dispute the Examiner's assertion that tinting a portion of the entrance lens of a double-sided black stripes lenticular lens sheet is commonly done to exhibit fine contrast in the display. Indeed the use of tinting in EP '460 (directed to a single-sided lenticular lens sheet) is not commonly

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used in a double-sided black stripes lenticular lens sheet depicted in the primary reference.

Indeed from a reading of EP '460, it is believed that one can readily see that the use of the tinted layer in that structure is intended to remove external light efficiently; see, for instance, the discussion in the next-to-last sentence in the abstract and page 3, lines 39 to 42 of the specification. As such, the reference and the invention described therein evidently premise a single-sided lenticular lens sheet.

More particularly, with respect to the lenticular lens sheet shown in EP '460, the external light falling perpendicularly on the lenticular lens sheet from a viewing side travels out toward the viewing side a second time after undergoing total reflection several times in the entrance lens part. Thus, the single-sided lenticular lens sheet of EP '460 necessitates a tinted layer to remove external light.

In contrast, the double-sided black stripes lenticular lens sheet of Yoshimura et al. '031 is inherently designed sufficiently to reduce external light from a viewing side by the arrangement in the lenticular lens itself, particularly the placement of black stripes and the arrangement of the exit lens part. Thus, it is

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commonly understood in the art that a double-sided black stripes lenticular lens sheet, as shown in the primary reference, would require no further means for reducing external light. Specifically, in the double-sided black stripes lenticular lens sheet of the primary reference, half of the amount of external light falling perpendicularly on the lenticular lens sheet from a viewing side is absorbed by the absorbing layer. The other half of the quantity of external light penetrating the exit lens part travels through the lenticular lens sheet and goes out of the lenticular lens sheet without undergoing total reflection; see instant Fig. 6. Thus, the person of ordinary skill in this art would not be looking to place a tinted layer for reducing external light in a double-sided black stripes lenticular lens sheet.

As noted above, the external light is sufficiently reduced by the arrangement of the double-sided black stripes lenticular lens sheet. Thus, the artisan would not have recognized at the time of the invention that it would be necessary further to reduce external light in the double-sided black stripes lenticular lens sheet of the primary reference.

Applicants respectfully submit that the person of ordinary skill in the art would have no motivation to use the tinted layer

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of EP '460 (used for reducing external light) in the lenticular lens sheet of the primary reference, which primarily would have no need to reduce external light. Applicants respectfully submit that the justification advanced in the Office Action regarding the motivation to combine the references is an ex parte reasoning and that it would not have been obvious to the artisan to add a tinted layer of the entrance lens as shown in the secondary reference into the lenticular lens sheet of Yoshimura et al. '031. The lenticular lens sheets of the primary and secondary references are materially and significantly different. The person of ordinary skill in the art would not think there is a need further with reflected external light in a double-sided black stripes lenticular lens sheet. There is no proper suggestion to do so from the secondary reference teaching. The rejection should be withdrawn.

The rejections of claim 14 and 15 under 35 USC 103 as unpatentable over Yoshimura et al. '031 and EP '460, further in view of Ludwig Jr. et al. '205, and the rejection of claim 19 under 35 USC 103 as unpatentable over Yoshimura et al. '031 and EP '460 further in view of Ananin '090 are respectfully traversed. None of the secondary references overcome the deficiencies regarding the primary and secondary references discussed above. These claims are

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patentable for the same reasons advanced with respect to the patentability of claims 11 to 13 and 16 to 18. The rejection should be withdrawn.

The Examiner is thanked for acknowledging that the certified copy of the priority document was submitted in the parent application and for listing the references submitted with an Information Disclosure Statement. The Examiner is asked to acknowledge the Request for Approval of Drawing Change filed August 28, 2001.

In view of the foregoing revisions and remarks, it is respectfully submitted that the application is in condition for allowance and a USPTO paper to those ends is earnestly solicited.

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The Examiner is requested to telephone the undersigned if additional changes are required in the case prior to allowance.

Respectfully submitted,

PARKHURST & WENDEL, L.L.P.



Charles A. Wendel  
Registration No. 24,453

Date

CAW/ch

Attorney Docket No.: DAIN:518A

PARKHURST & WENDEL, L.L.P.  
1421 Prince Street, Suite 210  
Alexandria, Virginia 22314-2805  
Telephone: (703) 739-0220

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MARK DP  
(Amended)

11. (New) A lenticular lens sheet having an entrance surface and an exit surface comprising:

a base part [having a flat entrance-side surface and a flat exit-side surface];

an entrance lens part [disposed on the flat entrance-side surface of the base part, the entrance lens part] forming the entrance surface of the lenticular lens sheet and having an array of a plurality of convex lens elements capable of gathering light rays; [and]

← An exit lens part forming the exit surface of the lenticular lens sheet and having an array of a plurality of lens elements formed respectively in light-gathering regions in which light rays refracted by the convex lens elements of the entrance lens part gather, and

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a light absorbing layer [disposed on the flat exit-side surface of the base part, the light absorbing layer being] formed in light-nongathering regions in the exit surface of the lenticular lens sheet in which light rays refracted by the convex lens elements do not gather;

of the entrance lens part

wherein a tinted layer is formed at least in a portion of the entrance lens part near the entrance surface of the lenticular lens sheet.

(Amended)

13. (New) The lenticular lens sheet according to claim [12], wherein the lens elements of the exit lens part are either convex or concave toward the exit surface of the lenticular lens sheet.

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(Amended)

15. (New) The lenticular lens sheet according to claim [12],  
wherein the tinted layer contains a light diffusing material.

(Amended)

16. (New) The lenticular lens sheet according to claim [1],  
wherein the tinted layer extends along the light receiving surface  
of the entrance lens part.

17. (New) A rear projection screen comprising:

a lenticular lens sheet having an entrance surface and an exit  
surface; and

a Fresnel lens sheet disposed opposite to the entrance surface  
of the lenticular lens sheet facing an image light source,

wherein the lenticular lens sheet has: a base part [having a  
flat entrance-side surface and a flat exit-side surface]; an  
entrance lens part [disposed on the flat entrance-side surface of  
the base part, the entrance lens part] forming the entrance surface  
of the lenticular lens sheet and having an array of a plurality of  
convex lens elements capable of gathering light rays; [and]

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An exit lens part forming the exit surface of the lenticular lens sheet and having an array of a plurality of lens elements formed respectively in light-gathering regions in which light rays refracted by the convex lens elements of the entrance lens part gather and a light

absorbing layer [disposed on the flat exit-side surface of the base part, the light absorbing layer being] formed in light-nongathering regions in the exit surface of the lenticular lens sheet in which light rays refracted by the convex lens elements do not gather; the

of the entrance lens part

entrance lens part being provided with a tinted layer at least in a portion thereof near the entrance surface of the lenticular lens sheet.

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